

## WHAT IS CLAIMED IS:

1. A router device for setting up a label switched path from the router device as an ingress router, comprising:

a first memory unit for storing a router identification information of a target router to be set as an egress router if possible;

a control unit for carrying out a control to set up the label switched path to the target router stored in the first memory unit;

a second memory unit for storing in correspondence a label switched path identification information of the label switched path set up according to the control by the control unit and an address information to be given to packets that are to be transferred by passing through the target router in the first memory unit; and

a routing processing unit for carrying out a routing processing for the packets according to the label switched path identification information and the address information stored in the second memory unit.

2. The router device of claim 1, further comprising:

a first registration unit for registering the label switched path identification information and a router address information of the target router stored in the first memory unit into the second memory unit; and

a second registration unit for registering the label switched path identification information and network/router address information of one or a plurality of networks/routers to which the packets are to be transferred via the target router stored in the first memory unit, into the second memory unit.

3. The router device of claim 2, wherein the first registration unit carries out registration when the label switched path is set up by the control unit, and

the second registration unit carries out registration when an existence or an addition of a network/router connected to a downstream side of the target router stored in the first memory unit is recognized according to a prescribed

control protocol information transferred between the router device and other routers.

4. The router device of claim 2, wherein the control unit also carries out another control to delete the label switched path corresponding to the target router and to update contents of the second memory unit regarding the label switched path identification information when a deletion of the target router stored in the first memory unit is recognized according to a prescribed routing control protocol information transferred between the router device and other routers, and

the control unit also carries out still another control to update a content of the second memory unit regarding the network/router address information when a deletion of one network/router connected to the downstream side of the target router stored in the first memory unit is recognized.

5. The router device of claim 1, wherein the control unit starts carrying out the control at a timing where an existence or an addition of a network/router connected to a downstream side of the target router stored in the first memory unit is recognized according to a prescribed routing control protocol information transferred between the router device and other routers.

6. The router device of claim 1, wherein the target router stored in the first memory unit is selected to be a router that is located at a border of a range in which an identical routing control protocol operates.

7. The router device of claim 1, wherein the target router stored in the first memory unit is selected to be a router that is located at a border of a range to which the label switched path can be extended.

8. The router device of claim 1, wherein the target router stored in the first memory unit is selected to be a router that is located at a border of an

overlapping range between a range in which an identical routing control program operates and a range to which the label switched path can be extended.

9. The router device of claim 1, wherein the control unit selects one label switched path to be used for transferring those packets which have a specific address information according to a prescribed criterion, and the second memory unit stores in correspondence the label switched path identification information of said one label switched path and the specific address information, when it becomes possible to transfer those packets which have been the specific address information by using any one of a plurality of label switched paths that are set up according to the control by the control unit.

10. A label switched path control method at a router device for setting up a label switched path from the router device as an ingress router, comprising:

(a) storing a router identification information of a target router to be set as an egress router if possible, in an egress router list;

(b) carrying out a control to set up the label switched path to the target router stored in the egress router list;

(c) storing in correspondence a label switched path identification information of the label switched path set up according to the control and an address information to be given to packets that are to be transferred by passing through the target router stored in the egress router list, in a routing table; and

(d) carrying out a routing processing for the packets according to the label switched path identification information and the address information stored in the routing table.

11. A computer program product for causing a computer to function as a router device for setting up a label switched path from the router device as an ingress router, the computer program product comprising:

a first computer program code for causing the computer to store a router identification information of a target router to be set as an egress router if possible;

a second computer program code for causing the computer to carry out a control to set up the label switched path to the target router stored by the first computer program code;

a third computer program code for causing the computer to store in correspondence a label switched path identification information of the label switched path set up according to the control by the second computer program code and an address information to be given to packets that are to be transferred by passing through the target router stored by the first computer program code; and

a fourth computer program code for causing the computer to carry out a routing processing for the packets according to the label switched path identification information and the address information stored by the third computer program code.